

CLAIMS

1. A method for scheduling data transmission in a wireless communication system, the method comprising:
 - identifying one or more sets of terminals, each set including one or more terminals and corresponding to a hypothesis to be evaluated based on one or more criteria;
 - assigning a plurality of transmit antennas to the one or more terminals in each set;
 - evaluating performance of each hypothesis based on channel state information (CSI) associated with each terminal, the CSI being indicative of channel characteristics between the respective terminal and the corresponding transmit antennas; and
 - selecting at least one set of terminals to receive data transmission based, at least in part, on the performance of each hypothesis.
2. The method of claim 1 further comprising:
 - scheduling data transmission to the one or more terminals in the selected set.
3. The method of claim 1 wherein each hypothesis comprises a plurality of sub-hypotheses each of which corresponding to one or more specific assignments of the transmit antennas to the one or more terminals in the respective set and wherein the performance of each hypothesis is evaluated based on performance of the corresponding sub-hypotheses.
4. The method of claim 1, wherein the CSI for each terminal comprises signal-to-noise-plus-interference ratio (SNR) estimates derived at the respective terminal based on signals transmitted from the transmit antennas.
5. The method of claim 1, wherein the evaluating includes:
 - computing a performance metric for each hypothesis as a function of throughput achievable by each terminal in the respective set.

6. The method of claim 1, wherein the plurality of transmit antennas are assigned to the one or more terminals in each set based on priority of terminals in the set.
7. The method of claim 6, wherein the priority of each terminal is determined based on one or more factors including quality of service (QoS) associated with the respective terminal.
8. An apparatus for managing data transmission in a wireless communication system, the apparatus comprising:
 - means for identifying one or more sets of terminals, each set including one or more terminals and corresponding to a hypothesis to be evaluated based on one or more criteria;
 - means for assigning a plurality of transmit antennas to the one or more terminals in each set;
 - means for evaluating performance of each hypothesis based on channel state information (CSI) associated with each terminal, the CSI being indicative of channel characteristics between the respective terminal and the corresponding transmit antennas;
 - and
 - means for selecting at least one set of terminals to receive data transmission based, at least in part, on the performance of each hypothesis.
9. The apparatus of claim 8 further comprising:
 - means for scheduling data transmission to the one or more terminals in the selected set.
10. The apparatus of claim 8 wherein each hypothesis comprises a plurality of sub-hypotheses each of which corresponding to one or more specific assignments of the transmit antennas to the one or more terminals in the respective set and wherein the performance of each hypothesis is evaluated based on performance of the corresponding sub-hypotheses.

11. The apparatus of claim 8, wherein the CSI for each terminal comprises signal-to-noise-plus-interference ratio (SNR) estimates derived at the respective terminal based on signals transmitted from the transmit antennas.
12. The apparatus of claim 8, wherein means for evaluating includes:
means for computing a performance metric for each hypothesis as a function of throughput achievable by each terminal in the respective set.
13. The apparatus of claim 8, wherein the plurality of transmit antennas are assigned to the one or more terminals in each set based on priority of terminals in the set.
14. The apparatus of claim 13, wherein the priority of each terminal is determined based on one or more factors including quality of service (QoS) associated with the respective terminal.
15. A base station in a multiple-input multiple-output (MIMO) communication system, comprising:
a plurality of transmit antennas configured to receive and transmit data signals;
and
a scheduler configured to receive channel state information (CSI) associated with a plurality of terminals in the communication system, select a set of one or more terminals for data transmission based at least in part on the received CSI, and assign the plurality of transmit antennas to the one or more selected terminals.
16. The base station of claim 15 wherein the plurality of terminals are divided into one or more sets of terminals, each set including one or more terminals and corresponding to a hypothesis, and wherein the scheduler selects the set of one or more terminals for data transmission based on performance of each hypothesis.

17. A terminal in a multiple-input multiple-output (MIMO) communication system, comprising:

- a plurality of receive antennas, each receive antenna configured to receive signals transmitted from a base station; and

- a processor configured to process the received signals, obtain channel state information (CSI) associated with the received signals, and sends the CSI back to the base station,

wherein the terminal is in a set of terminals scheduled to receive data transmission from the base station in a particular time interval, and wherein the set of terminals scheduled to receive data transmission is selected from among one or more sets of terminals based at least in part on CSI received from the terminals in each set .

18. A multiple-input multiple-output (MIMO) communication system, comprising:
a base station comprising:

- a plurality of transmit antennas; and

- a scheduler configured to receive channel state information (CSI) indicative of channel estimates for a plurality of terminals in the communication system, select a set of one or more terminals for data transmission on a downlink based at least in part on the received CSI, and assign the plurality of transmit antennas to the one or more selected terminals; and

one or more terminals, each terminal comprising:

- a plurality of receive antennas to receive signals from the base station;

- a processor to process the received signals, derive CSI for the received signals, and send the CSI back to the base station.